

# Leading MDU Property Owner Blows Away The Competition

Roseland Property Co. attracts today's bandwidth-hungry tenants with blown fiber

By Richard Holtz ■ *President, InfiniSys*

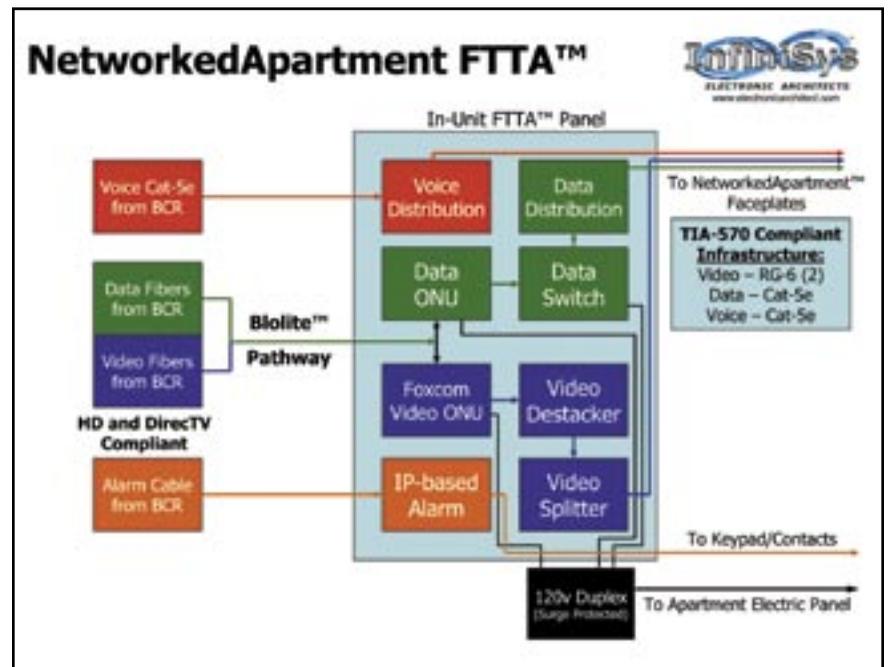
Layering empty drinking-straw-size plastic tubes now and blowing fiber in later, as needed, may be catching on in the United States. The technique has long been used in Europe and the Far East, where apartment living is the norm. But here it has been best known for installations in convention halls. Now Roseland Property Company, a U.S. developer of upscale multiple-dwelling unit buildings, has taken the plunge.

Multi-dwelling units are a huge market for broadband communications networks. They make up more than a third of all U.S. households, and the majority of their residents are in the highest Internet usage groups. Thus it is no surprise that the June 2004 In-Stat/MDR market study estimates MDU broadband subscribers will reach 90 million by the year 2008, nearly 10 times the current number. This opportunity, combined with the fast-growing fiber-to-the-home market, has MDU property owners exploring ways to prepare their sites for the future without going broke now.

## Responding to Bandwidth Demand

"The number one demand today among residents is extremely fast Internet access," says Josh Katz, manager of consumer technology for Roseland ([www.roselandproperty.com](http://www.roselandproperty.com)), a developer of urban luxury apartments and homes in the Northeast. "In response, we have implemented a fairly robust network infrastructure for today while preparing our MDUs for fiber tomorrow."

Roseland Property Company is one of the first MDU property owners in the U.S. to choose a blown optical fiber solution. Many of today's apartment units include more than one computer, a security system,



The FTTA system allows data (green) and video (blue) to be distributed via Blolite from the building communications room (BCR) to an optical socket in each apartment.

and entertainment devices all connected simultaneously, requiring huge amounts of bandwidth. Sharing large files like music, video, software and images has become a reality for savvy Internet users. "We see many technologies on the horizon," says Katz, "like online gaming, high-definition video, and working from the home office, all of which will require huge amounts of bandwidth." As teleworking from home continues to increase, and as new technologies enter our lives, the demand for bandwidth in the residence will inevitably continue to grow and fiber will become a necessity. So although construction budgets often limit spending on items like information technology, the network infrastructure of MDUs should be designed

upfront to support bandwidth requirements for many decades to come.

Because the information-carrying capacity of optical fiber is so high, a blown optical fiber system prepares the building for whatever bandwidth requirements the future may bring. Fiber also offers several other benefits over traditional copper cabling, such as immunity to noise from adjacent electrical circuits.

## How it Works

The concept of blown fiber involves installing a network of empty tubes called "Microduct" to create pathways to each residential unit. Once a local service provider brings fiber to the curb or to the building, optical fiber can be easily blown

## Comparison of Network Cabling Choices for MDUs

<b>Construction Phase</b>	<p>Install standard copper/coax to meet only current communications needs.</p> <ul style="list-style-type: none"> <li>• No additional labor or material cost</li> </ul>	<p>Install empty Blolite microduct in addition to standard copper/coax.</p> <ul style="list-style-type: none"> <li>• Additional material costs but no additional labor costs</li> </ul>	<p>Install conventional fiber cable in addition to standard copper/coax.</p> <ul style="list-style-type: none"> <li>• Additional material costs</li> <li>• Additional labor costs for fiber termination &amp; testing</li> <li>• Requires knowledge of future fiber requirements</li> </ul>
<b>Upgrade Phase</b>	<p>Install fiber to meet new requirements.</p> <ul style="list-style-type: none"> <li>• Extensive labor costs to rewire existing infrastructure</li> <li>• Disruption to building as fiber is deployed</li> </ul>	<p>Blow fiber into existing microduct.</p> <ul style="list-style-type: none"> <li>• Minimal labor cost and no disruption to facility as fiber is installed quickly and cleanly</li> </ul>	<p>No changes if previously installed cable still meets network requirements.</p> <ul style="list-style-type: none"> <li>• Extensive labor costs if previously installed fiber must be supplemented to meet new requirements</li> </ul>
<b>Lifecycle Summary</b>	<p>Lowest first cost, but future infrastructure upgrades will be likely and expensive.</p>	<p>Possible lifetime material cost premium but risk is minimized and flexibility maximized by adding fiber on an as-needed basis, thus deferring costs and meeting budget requirements.</p>	<p>Lowest material cost, but requires extensive upfront planning of future network requirements. Changes or upgrades could be more expensive and disruptive.</p>



*This chart compares the difference between installing standard copper/coax to meet current needs, installing conventional fiber, and installing a Blolite blown optical fiber solution.*

into the tubes to reach specific residential units. Fiber can be delivered on demand to either all units or to only those residents requesting it. The technology is not new. But in North America it has been used more in public spaces such as convention centers than in residential settings.

“Several national providers are pursuing a fiber strategy, and once they implement it, we will be positioned to quickly and economically respond with a non-disruptive installation that blows fiber to apartments through the previously installed Microduct tubes,” says Katz.

“And if it takes service providers longer than expected to deliver fiber to the building, it just means that we prepared by putting in a very small, very inexpensive pathway.”

### Bringing technology home

“Most of our properties attract residents in the 24 to 42 age range, and because we’re building in urban infill communities, we’re dealing with a sophisticated resident,” says Katz. “These are people who are used to having the best technology and integrating it into their daily lives.”

Through Roseland’s RoseLink® technology package, residents can enjoy all the features of a networked apartment for one low fee, typically less than \$100 per month. “The RoseLink package is included as part of the rent, and residents get surround sound, high-speed Internet access, an intrusion alarm, wiring for multiple phone lines and a significant video offering from DirecTV,” says Katz. “The fee is less than what it would cost to purchase these ser-

vices independently, so the residents save money.”

Roseland Property Company’s networked residential units each include two coaxial cables for video service and three Category 5E cables for telecommunications and data service. In 2004, Roseland added one blown fiber Microduct tube per residence to its technology standard using General Cable/NextGen’s Blolite™ blown optical fiber solution ([www.blolite.net](http://www.blolite.net)).

To ensure an infrastructure capable of supporting RoseLink, Roseland calls on the services of InfiniSys, Inc. ([www.electronicarchitect.com](http://www.electronicarchitect.com)), a packager of electronic infrastructure and cabling designs specifically for the multi-family housing industry. The blown fiber technology is delivered to each residence via InfiniSys’



FTTA™ (Fiber to the Apartment) system, which will ultimately allow data and video to be distributed to residents via optical fiber while telephone service, typically, is run over traditional copper wiring.

The FTTA system uses an unobtrusive, locked enclosure in each residential unit called a Networked Apartment Communications Gateway™. This enclosure is a central distribution point that houses the incoming Microduct tube. It is where fiber will eventually be connected to an optical network unit. The Gateway also houses copper cables and distribution components for phone, security, and energy management services. From the Gateway, shorter runs of Category 5E unshielded twisted-pair copper and coax cabling connect to faceplates throughout the apartment for voice, data, and video. Other cabling connects to security and energy management keypads.

“Our basic FTTA system consists of a Site Communications Gateway, a Building

*Once the tubes are in place, a two-person crew then uses specialized blowing equipment that delivers clean, compressed air to quickly and easily propel up to 12 optical fibers through each tube.*

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Communications Gateway for each building, and the Networked Apartment Communications Gateway in each apartment," says Orrin Charm, systems architect at InfiniSys and head of the California office.

"The site communications gateway is where the incoming fiber from the service providers will someday be connected. The fiber will then connect to each building at

the Building Communications Gateway, which is typically located in the building communications room. From there, fiber will be blown through the Microduct tubes to reach individual Networked Apartment Communications Gateways." According to Charm, the system makes for a much easier fiber installation and faster transmission speeds than armored fiber directly at-

tached to the structure and hand-threaded through it.

"Adding the FTTH system and blown fiber tubes as part of our overall concept delivers a cabling system designed with the future in mind," says Charm. "It also lets developers have total control over upgrading services because fiber can be blown in at any time."

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### **Saving Money with Less Disruption**

In a sense, Roseland is hedging its broadband bets right now. Many strategies exist for implementing broadband at today's network speeds, including cable modems, DSL, wireless and satellite solutions. However, these existing solutions may be insufficient to support broadband applications in the future. A fiber optic solution is the only solution capable of providing the most potential bandwidth needed for advanced applications and for continued increase of bandwidth demand among residents.

A blown fiber system prepares properties for fiber deployment even when future requirements cannot be precisely determined. To minimize installation costs, some property owners take advantage of implementing dark fiber, optical fiber infrastructure put in place during the building construction phase for future use. However, because implementing dark fiber is guesswork, property owners risk cost and time. Since there are several types of fiber, continuous advances in fiber technology, and no universal standard for determining what type or how much dark fiber to install, there is no way to know if the dark fiber implemented today will be the right fiber for tomorrow's broadband applications.

Blown fiber mitigates this uncertainty by allowing property owners to install empty Microducts today and add fiber in the future on demand. "We know we need a way to someday bring fiber to residents," says Charm. "And because implementing dark fiber is all guesswork, there's no cost-effective equivalent for a blown optical fiber solution."

A blown fiber solution also offers up-front cost advantages that mitigate some of the Microduct cost because installing only Microduct tubes eliminates the time and



*The Myrtles at Olde Towne in Portsmouth, Virginia, features high bandwidth to each apartment, and ducts for blown fiber.*

expense of connecting and testing dark fibers, which can cost an additional \$25 to \$35 per fiber end. These costs are deferred until the fiber is deployed in the future, spreading the cost of a fiber infrastructure over time and offering property owners a way to “pay as they go.”

“As designers, we are held responsible for future-proofing properties, and blown fiber makes good sense to me because we can pull in Microducts at the same time as other cables,” says Charm. “The combination of the cost savings to implement Blolite Microduct up front and the advantage of having a pathway for future fiber is a win-win situation, proving long-term and rewarding benefits for developers and residents alike.”

Microduct tubes can be used for intra- or inter- building networks with plenum, riser or outside plant constructions available. Sections of Microduct are joined together with push-fit connectors for simple configuration and installation. “Blolite Microducts are especially convenient, because they have an overall smaller diameter,” says Charm. The Microducts come in two sizes, 5 mm (about one-fifth of an inch in diameter) and 8 mm (a third of an inch). “This allows for easy installation in reduced spaces with equal or greater capacity.”

Before the Microduct tubes are populated with fiber, they are tested to ensure a clear pathway and ability to hold pressure. Testing involves putting air into the tube, sealing both ends, and monitoring a pressure gauge for fluctuations. A small projectile is then shot into the tube to ensure there are no blockages or major diameter fluctuations.

While problems with tubes are extremely rare, any section that becomes damaged during construction can be easily replaced by piecing in a new Microduct section with the use of the couplings.

Once the tubes are ready for blowing, a two-person crew then uses specialized equipment that delivers compressed air to propel up to 12 optical fibers through each tube. Blowing in the fiber is an extremely quick, clean and simple process with minimal labor involved and no disruption to the surrounding environment. Because blown fiber is added post construction, there is also less chance of damaging fiber. As new MDUs or equipment is added or if fiber types and counts change, a blown fiber system can be easily reconfigured to adapt. Implementing new or replacing conventional fiber can require construction crews and removal of ceilings or walls. With blown fiber, obsolete fiber can be easily blown out of populated Microduct and new fiber blown back into empty tubes. Consequently, there is little or no disruption to residents when fiber is added or upgraded at a later date.

“The time to plan the communications wiring of properties is at the time of construction, not when residents start to move out to other properties that offer higher-speed Internet,” says Charm. “It is far easier, non-disruptive and less costly to build the necessary pathways and spaces into the design rather than trying to fit them in later.”

#### **Wiring MDUs to the extreme**

Roseland Property Company is cur-

rently constructing The Myrtles at Olde Towne, a 246 one- and two-bedroom luxury apartment community in Portsmouth, Virginia that will honor the appearance of Georgian townhomes. Residents will receive the RoseLink package via the InfiniSys FTTA system, which will include a Blolite Microduct to each apartment unit for future fiber.

“The Myrtles is being wired to the ‘extreme’ extent that we wire our properties, including the fiber pathway,” says Katz. “From this point forward, Blolite Microducts will be a standard for all our units.” With completion expected in summer of 2005, The Myrtles at Olde Towne is adjacent to the large and historic U.S. Naval Medical Center and may attract many of the medical professionals.

While the number-one challenge to actually implementing fiber is having service providers and electronics available to support it, Katz is confident that fiber in the multi-family residence will be commonplace in the next two to four years. “I’m hopeful that with our eye on technology, we can confidently say there won’t be another building a resident can walk into where they will get a faster Internet connection,” says Katz.

Roseland Property Company is already working towards going live with the FTTA fiber system by offering beta-site locations for service providers, and and it is looking forward to maintaining resident retention while increasing property value and profits.

“We operate in a competitive market where if you go one way down the street, there are five buildings to choose from, and if you go the other way, there’s another five,” says Katz. “We want to be the leader by being the first and the best, and the FTTA system with Blolite Microducts gets us ready to do just that. We’re prepared to blow the competition out of the water.” ♦

#### **About The Author**

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